

AGENDA
TRAFFIC COMMITTEE MEETING
FEBRUARY 15, 2012 – 7:30 P.M.
LOWER LEVEL CONFERENCE ROOM - TROY CITY HALL
500 W. BIG BEAVER ROAD

1. Roll Call
2. Minutes – January 18, 2012

REGULAR BUSINESS

3. Discussion of Stop Signs and Yield Signs
4. Request for Intersection Control – Burdic at Edith
Requested by Holly Pryor, 2106 Burdic
5. Public Comment
6. Other Business
7. Adjourn

cc: Item 3: Holly Pryor, 2106 Burdic
Residents within 300 feet of Burdic at Edith intersection

Traffic Committee Members
Lt. Robert Redmond, Police Department
Lt. Eric Caloia, Fire Department
William J. Huotari, Deputy City Engineer/Traffic Engineer

TRAFFIC COMMITTEE

MESSAGE TO VISITORS, DELEGATIONS AND CITIZENS

The Traffic Committee is composed of seven Troy citizens who have volunteered their time to the City to be involved in traffic and safety concerns. The stated role of this Committee is:

- a. To give first hearing to citizens' requests and obtain their input.
- b. To make recommendations to the City Council based on technical considerations, traffic surveys, established standards, and evaluation of citizen input.
- c. To identify hazardous locations and recommend improvements to reduce the potential for traffic accidents.

Final decisions on sidewalk waivers will be made by the Committee at this meeting.

The recommendations and conclusions arrived at on regular items this evening will be forwarded to the City Council for their final action. Any citizen can discuss these recommendations before City Council. The items discussed at the Traffic Committee meeting will be placed on the City Council Agenda by the City Manager. The earliest date these items might be considered by City Council would normally be 10 days to 2 weeks from the Traffic Committee meeting. If you are interested, you may wish to contact the City Manager's Office in order to determine when a particular item is on the Agenda.

Persons wishing to speak before this Committee should attempt to hold their remarks to no more than 5 minutes. Please try to keep your remarks relevant to the subject at hand. Please speak only when recognized by the Chair. These comments are made to keep this meeting moving along. Anyone wishing to be heard will be heard; we are here to listen and help in solving or resolving your particular concerns.

REGULAR BUSINESS**3. Discussion of Stop Signs and Yield Signs****4. Request for Intersection Control – Burdic at Edith**

Holly Pryor of 2106 Burdic requested that the intersection of Burdic and Edith be reviewed for the purpose of installing Stop signs. Ms. Pryor states that the lack of Stop signs at this intersection creates a hazardous situation.

SUGGESTED RESOLUTIONS:**Item 4:**

- a. **RESOLVED**, that the Traffic Committee recommends that the intersection control at Burdic and Edith be modified from “no traffic control” to STOP signs on the Edith Street approaches to the intersection.
- b. **RESOLVED**, that the Traffic Committee recommends no changes at the intersection of Burdic at Edith.

5. Public Comment**6. Other Business****7. Adjourn**

A regular meeting of the Troy Traffic Committee was held Wednesday, January 18, 2012 in the Lower Level Conference Room at Troy City Hall. Pete Ziegenfelder called the meeting to order at 7:30 p.m.

1. Roll Call

PRESENT: Sarah Binkowski
John Diefenbaker
Ted Halsey
Richard Kilmer
Gordon Schepke
Pete Ziegenfelder

ABSENT: Al Petrulis

Also present: Bill Huotari, Deputy City Engineer/Traffic Engineer
Sergeant Michael Szuminski, Troy Police Dept.

2. Minutes – November 16, 2011

RESOLUTION # 2012-01-01

Moved by Kilmer
Seconded by Binkowski

To approve the November 16, 2011 minutes as printed.

YES: All-6
NO: None
ABSENT: 1 (Petrulis)
MOTION CARRIED

REGULAR BUSINESS

3. Request for Stop or Yield Sign – Brunswick at Cadmus

Janel Karoumy of 6910 Brunswick requested that the intersection of Brunswick at Cadmus be reviewed for the purpose of installing a Stop or Yield sign on southbound Brunswick at Cadmus. Ms. Karoumy states that traffic entering from South Boulevard does not yield or stop at the intersection before proceeding onto Cadmus creating a hazardous situation.

Nikola Todorovski of 6909 Brunswick submitted an email requesting multi-way Stop sign control at this intersection (copy attached).

The Traffic Committee tabled this item to the February 15, 2012 meeting.

RESOLUTION # 2012-01-02

Moved by Halsey
Seconded by Diefenbaker

RESOLVED, that the request for a Stop or Yield sign at the Brunswick and Cadmus intersection be tabled to the February 15, 2012 Traffic Committee meeting.

YES: All-6
NO: None
ABSENT: 1 (Petrulis)
MOTION CARRIED

4. Public Comment

There were no members of the public in attendance.

5. Other Business

Mr. Kilmer requested that Badder Street near Rochester be reviewed for illegal parking activities. Mr. Kilmer has noted that contractor vehicles have been parking on both sides of street after 9:00 a.m.

6. Adjourn

The meeting adjourned at 7:58 p.m.

Pete Ziegenfelder, Chairperson

Bill Huotari, Recording Secretary



TRAFFIC COMMITTEE REPORT

February 2, 2012

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/ Traffic Engineer

SUBJECT: Stop Signs and Yield Signs

Background:

There has been discussion relative to the use of Yield signs and Stop signs at previously uncontrolled intersections. Typically, an engineering study is performed that evaluates the intersection based on the following factors:

- A. Vehicular, bicycle and pedestrian traffic volumes on all approaches;
- B. Number and angle of approaches;
- C. Approach speeds;
- D. Sight distance available on each approach; and
- E. Reported crash experience

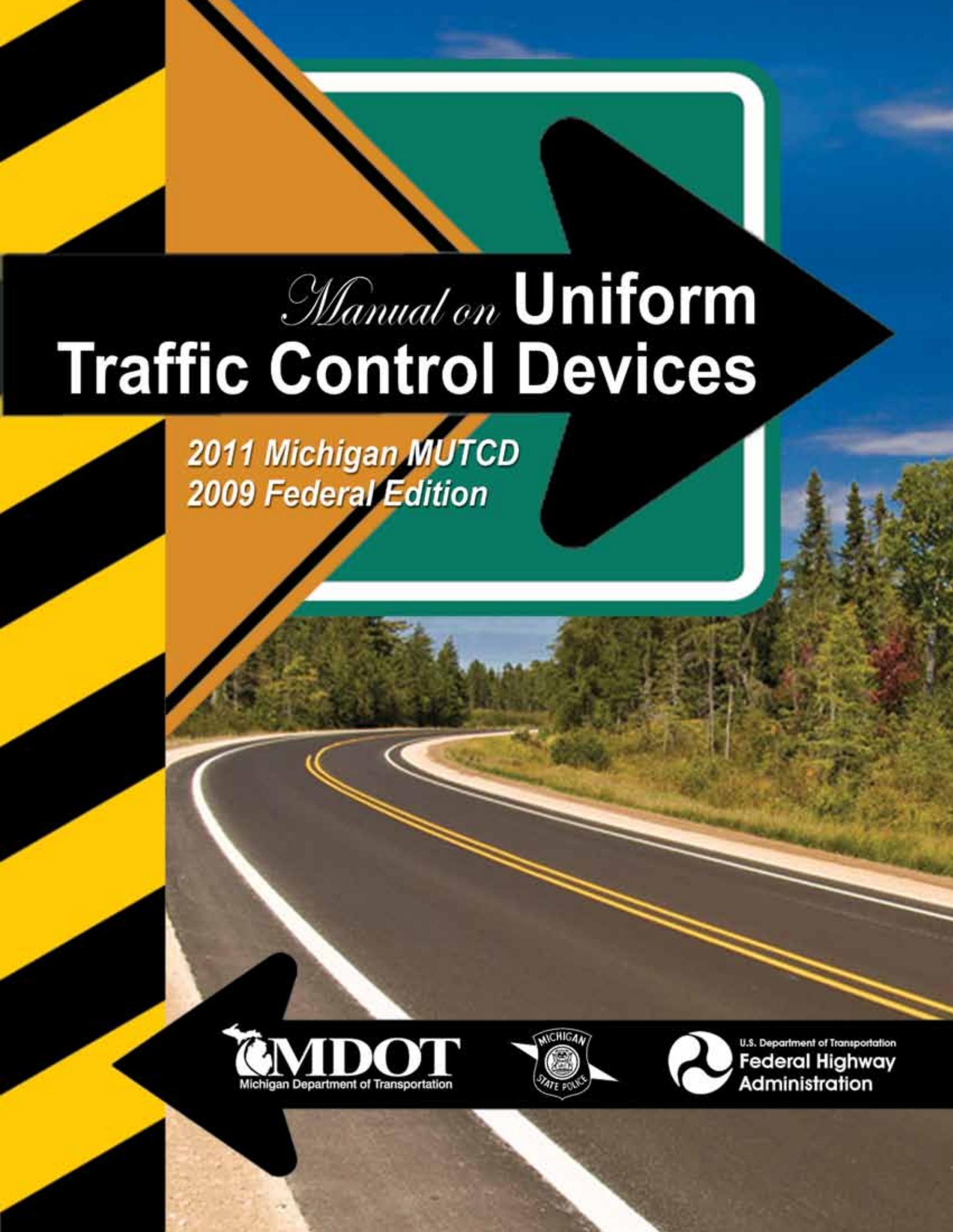
In most cases, a Yield or a Stop sign could be the recommended treatment as the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) provides "guidance" for establishing intersection control rather than providing a "standard". "Guidance", per the MMUTCD is recommended, but not mandatory and considered a practice in typical situations. "Standard" is a statement of required which is considered mandatory. (copy of the relevant sections of the MMUTCD are attached).

There are no "warrants" per se to be met for the installation of a Yield or Stop sign like those that exist for a new traffic signal. Rather, the MMUTCD states that "Engineering judgment should be used to establish intersection control". Back on October 9, 1972, the Traffic Committee passed a resolution, for information only, which set forth procedures to follow for the use of Stop signs at residential intersections (copy attached). This motion set forth the following "Determine the safe approach speeds in accordance with sight distance restrictions. If the safe approach speed is 10mph or less, stop signs shall be installed for one of the streets".

Orchard, Hiltz & McCliment, Inc. (OHM) has been reviewing the safe approach speed for previous intersection control requests and has been recommending Yield or Stop signs, in most cases, based on the safe approach speed. If the safe approach speed is less than 10mph then a Stop sign is the recommended treatment and if greater than 10mph then a Yield sign is the recommended treatment.

This has been the predominant factor in determining whether a Yield sign or Stop sign is the recommended treatment since most intersections brought before the Traffic Committee do not have a significant crash history or unusually high traffic and/or pedestrian volumes that would necessitate the use of a Stop sign. There are other factors that are considered, but in the end it comes down to engineering judgment as to what is the proper or recommended treatment for an intersection.

If the desire of the Traffic Committee is to not recommend Yield signs, even if the safe approach speed is above 10mph, then the Traffic Committee should update the informational warrant to preclude the use of anything but Stop signs for intersection control.



Manual on **Uniform Traffic Control Devices**

*2011 Michigan MUTCD
2009 Federal Edition*



U.S. Department of Transportation
**Federal Highway
Administration**

Table 2B-1. Regulatory Sign and Plaque Sizes (Sheet 4 of 4)

Sign or Plaque	Sign Designation	Section	Conventional Road		Expressway	Freeway	Minimum	Oversized
			Single Lane	Multi-Lane				
SUNDAY (and times) (2 lines) (plaque)	R10-20aP	2B.53	24 x 18	24 x 18	—	—	—	—
Crosswalk, Stop on Red	R10-23	2B.53	24 x 30	24 x 30	—	—	—	—
Push Button To Turn On Warning Lights	R10-25	2B.52	9 x 12	9 x 12	—	—	—	—
Left Turn Yield on Flashing Red Arrow After Stop	R10-27	2B.53	30 x 36	30 x 36	—	—	—	—
XX Vehicles Per Green	R10-28	2B.56	24 x 30	24 x 30	—	—	—	—
XX Vehicles Per Green Each Lane	R10-29	2B.56	36 x 24	36 x 24	—	—	—	—
Right Turn on Red Must Yield to U-Turn	R10-30	2B.54	30 x 36	30 x 36	—	—	—	—
At Signal (plaque)	R10-31P	2B.53	24 x 9	24 x 9	—	—	—	—
Push Button for 2 Seconds for Extra Crossing Time	R10-32P	2B.52	9 x 12	9 x 12	—	—	—	—
Keep Off Median	R11-1	2B.57	24 x 30	24 x 30	—	—	—	—
Road Closed	R11-2	2B.58	48 x 30	48 x 30	—	—	—	—
Road Closed - Local Traffic Only	R11-3a,3b,4	2B.58	60 x 30	60 x 30	—	—	—	—
Weight Limit	R12-1,2	2B.59	24 x 30	24 x 30	36 x 48	—	—	36 x 48
Weight Limit	R12-3	2B.59	24 x 36	24 x 36	—	—	—	—
Weight Limit	R12-4	2B.59	36 x 24	36 x 24	—	—	—	—
Weight Limit	R12-5	2B.59	24 x 36	24 x 36	36 x 48	48 x 60	—	—
Weigh Station	R13-1	2B.60	72 x 54	72 x 54	96 x 72	120 x 90	—	—
Truck Route	R14-1	2B.61	24 x 18	24 x 18	—	—	—	—
Hazardous Material	R14-2,3	2B.62	24 x 24	24 x 24	30 x 30	36 x 36	—	42 x 42
National Network	R14-4,5	2B.63	30 x 30	30 x 30	36 x 36	36 x 36	—	42 x 42
Fender Bender Move Vehicles	R16-4	2B.65	36 x 24	36 x 24	48 x 36	60 x 48	—	48 x 36
Lights On When Using Wipers or Raining	R16-5,6	2B.64	24 x 30	24 x 30	36 x 48	48 x 60	—	36 x 48
Turn On Headlights Next XX Miles	R16-7	2B.64	48 x 15	48 x 15	72 x 24	96 x 30	—	72 x 24
Turn On, Check Headlights	R16-8,9	2B.64	30 x 15	30 x 15	48 x 24	60 x 30	—	48 x 24
Begin, End Daytime Headlight Section	R16-10,11	2B.64	48 x 15	48 x 15	72 x 24	96 x 30	—	72 x 24

* See Table 9B-1 for minimum size required for signs on bicycle facilities

- Notes: 1. Larger signs may be used when appropriate
 2. Dimensions in inches are shown as width x height

- 07 **Where side roads intersect a multi-lane street or highway that has a speed limit of 45 mph or higher, the minimum size of the STOP signs facing the side road approaches, even if the side road only has one approach lane, shall be 36 x 36 inches.**
- 08 **Where side roads intersect a multi-lane street or highway that has a speed limit of 40 MPH or lower, the minimum size of the STOP signs facing the side road approaches shall be as shown in the Single Lane or Multi-lane columns of Table 2B-1 based on the number of approach lanes on the side street approach.**
Guidance:
- 09 *The minimum sizes for regulatory signs facing traffic on exit and entrance ramps should be as shown in the column of Table 2B-1 that corresponds to the mainline roadway classification (Expressway or Freeway). If a minimum size is not provided in the Freeway column, the minimum size in the Expressway column should be used. If a minimum size is not provided in the Freeway or Expressway Column, the size in the Oversized column should be used.*

Section 2B.04 Right-of-Way at Intersections

Support:

-  01 **Section 257.649 of the "Michigan Vehicle Code" (see Section 1A.11) establish the right-of-way rule at intersections having no regulatory traffic control signs such that the driver of a vehicle approaching an intersection must yield the right-of-way to any vehicle already in the intersection. When two vehicles approach an intersection from different streets or highways at approximately the same time, the right-of-way rule requires**

the driver of the vehicle on the left to yield the right-of-way to the vehicle on the right. The right-of-way can be modified at through streets or highways by placing YIELD (R1-2) signs (see Sections 2B.08 and 2B.09) or STOP (R1-1) signs (see Sections 2B.05 through 2B.07) on one or more approaches.

Guidance:

- 02 *Engineering judgment should be used to establish intersection control. The following factors should be considered:*
- A. *Vehicular, bicycle, and pedestrian traffic volumes on all approaches;*
 - B. *Number and angle of approaches;*
 - C. *Approach speeds;*
 - D. *Sight distance available on each approach; and*
 - E. *Reported crash experience.*
- 03 *YIELD or STOP signs should be used at an intersection if one or more of the following conditions exist:*
- A. *An intersection of a less important road with a main road where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law;*
 - B. *A street entering a designated through highway or street; and/or*
 - C. *An unsignalized intersection in a signalized area.*
- 04 *In addition, the use of YIELD or STOP signs should be considered at the intersection of two minor streets or local roads where the intersection has more than three approaches and where one or more of the following conditions exist:*
- A. *The combined vehicular, bicycle, and pedestrian volume entering the intersection from all approaches averages more than 2,000 units per day;*
 - B. *The ability to see conflicting traffic on an approach is not sufficient to allow a road user to stop or yield in compliance with the normal right-of-way rule if such stopping or yielding is necessary; and/or*
 - C. *Crash records indicate that five or more crashes that involve the failure to yield the right-of-way at the intersection under the normal right-of-way rule have been reported within a 3-year period, or that three or more such crashes have been reported within a 2-year period.*

Standard:

- 05 **YIELD or STOP signs shall not be used for speed control.**

Support:

- 06 Section 2B.07 contains provisions regarding the application of multi-way STOP control at an intersection.

Guidance:

- 07 *Once the decision has been made to control an intersection, the decision regarding the appropriate roadway to control should be based on engineering judgment. In most cases, the roadway carrying the lowest volume of traffic should be controlled.*
- 08 *A YIELD or STOP sign should not be installed on the higher volume roadway unless justified by an engineering study.*

Support:

- 09 The following are considerations that might influence the decision regarding the appropriate roadway upon which to install a YIELD or STOP sign where two roadways with relatively equal volumes and/or characteristics intersect:
- A. Controlling the direction that conflicts the most with established pedestrian crossing activity or school walking routes;
 - B. Controlling the direction that has obscured vision, dips, or bumps that already require drivers to use lower operating speeds; and
 - C. Controlling the direction that has the best sight distance from a controlled position to observe conflicting traffic.

Standard:

- 10 **Because the potential for conflicting commands could create driver confusion, YIELD or STOP signs shall not be used in conjunction with any traffic control signal operation, except in the following cases:**
- A. **If the signal indication for an approach is a flashing red at all times;**
 - B. **If a minor street or driveway is located within or adjacent to the area controlled by the traffic control signal, but does not require separate traffic signal control because an extremely low potential for conflict exists; or**
 - C. **If a channelized turn lane is separated from the adjacent travel lanes by an island and the channelized turn lane is not controlled by a traffic control signal.**

- 11 **Except as provided in Section 2B.09, STOP signs and YIELD signs shall not be installed on different approaches to the same unsignalized intersection if those approaches conflict with or oppose each other.**
- 12 **Portable or part-time STOP or YIELD signs shall not be used except for emergency and temporary traffic control zone purposes.**
- 13 **A portable or part-time (folding) STOP sign that is manually placed into view and manually removed from view shall not be used during a power outage to control a signalized approach unless the maintaining agency establishes that the signal indication that will first be displayed to that approach upon restoration of power is a flashing red signal indication and that the portable STOP sign will be manually removed from view prior to stop-and-go operation of the traffic control signal.**
- Option:
- 14 **A portable or part-time (folding) STOP sign that is electrically or mechanically operated such that it only displays the STOP message during a power outage and ceases to display the STOP message upon restoration of power may be used during a power outage to control a signalized approach.**
- Support:
- 15 **Section 9B.03 contains provisions regarding the assignment of priority at a shared-use path/roadway intersection.**

Section 2B.05 STOP Sign (R1-1) and ALL WAY Plaque (R1-3P)

Standard:

- 07 **When it is determined that a full stop is always required on an approach to an intersection, a STOP (R1-1) sign (see Figure 2B-1) shall be used.**
- 08 **The STOP sign shall be an octagon with a white legend and border on a red background.**
- 09 **Secondary legends shall not be used on STOP sign faces.**
- 10 **At intersections where all approaches are controlled by STOP signs (see Section 2B.07), an ALL WAY supplemental plaque (R1-3P) shall be mounted below each STOP sign. The ALL WAY plaque (see Figure 2B-1) shall have a white legend and border on a red background.**
- 11 **The ALL WAY plaque shall only be used if all intersection approaches are controlled by STOP signs.**
- 12 **Supplemental plaques with legends such as 2-WAY, 3-WAY, 4-WAY, or other numbers of ways shall not be used with STOP signs.**

Support:

- 07 **The use of the CROSS TRAFFIC DOES NOT STOP (W4-4P) plaque (and other plaques with variations of this word message) is described in Section 2C.59.**

Guidance:

- 08 *Plaques with the appropriate alternative messages of TRAFFIC FROM LEFT (RIGHT) DOES NOT STOP (W4-4aP) or ONCOMING TRAFFIC DOES NOT STOP (W4-4bP) should be used at intersections where STOP signs control all but one approach to the intersection, unless the only non-stopped approach is from a one-way street.*

Option:

- 09 **An EXCEPT RIGHT TURN (R1-10P) plaque (see Figure 2B-1) may be mounted below the STOP sign if an engineering study determines that a special combination of geometry and traffic volumes is present that makes it possible for right-turning traffic on the approach to be permitted to enter the intersection without stopping.**

Support:

- 10 **The design and application of Stop Beacons are described in Section 4L.05.**

Figure 2B-1. STOP and YIELD Signs and Plaques



R1-1



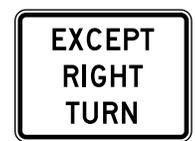
R1-3P



R1-2



R1-2aP



R1-10P

Section 2B.06 STOP Sign Applications

Guidance:

- 01 *At intersections where a full stop is not necessary at all times, consideration should first be given to using less restrictive measures such as YIELD signs (see Sections 2B.08 and 2B.09).*
- 02 *The use of STOP signs on the minor-street approaches should be considered if engineering judgment indicates that a stop is always required because of one or more of the following conditions:*
- A. *The vehicular traffic volumes on the through street or highway exceed 6,000 vehicles per day;*
 - B. *A restricted view exists that requires road users to stop in order to adequately observe conflicting traffic on the through street or highway; and/or*
 - C. *Crash records indicate that three or more crashes that are susceptible to correction by the installation of a STOP sign have been reported within a 12-month period, or that five or more such crashes have been reported within a 2-year period. Such crashes include right-angle collisions involving road users on the minor-street approach failing to yield the right-of-way to traffic on the through street or highway.*

Support:

- 03 The use of STOP signs at grade crossings is described in Sections 8B.04 and 8B.05.

Section 2B.07 Multi-Way Stop Applications

Support:

- 01 Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal.
- 02 The restrictions on the use of STOP signs described in Section 2B.04 also apply to multi-way stop applications.

Guidance:

- 03 *The decision to install multi-way stop control should be based on an engineering study.*
- 04 *The following criteria should be considered in the engineering study for a multi-way STOP sign installation:*
- A. *Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*
 - B. *Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*
 - C. *Minimum volumes:*
 1. *The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*
 2. *The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but*
 3. *If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.*
 - D. *Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*

Option:

- 05 Other criteria that may be considered in an engineering study include:
- A. The need to control left-turn conflicts;
 - B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;
 - C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and
 - D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.

Section 2B.08 YIELD Sign (R1-2)**Standard:**

- 01 **The YIELD (R1-2) sign (see Figure 2B-1) shall be a downward-pointing equilateral triangle with a wide red border and the legend YIELD in red on a white background.**

Support:

- 02 The YIELD sign assigns right-of-way to traffic on certain approaches to an intersection. Vehicles controlled by a YIELD sign need to slow down to a speed that is reasonable for the existing conditions or stop when necessary to avoid interfering with conflicting traffic.

Section 2B.09 YIELD Sign Applications**Option:**

- 01 YIELD signs may be installed:
- A. On the approaches to a through street or highway where conditions are such that a full stop is not always required.
 - B. At the second crossroad of a divided highway, where the median width at the intersection is 30 feet or greater. In this case, a STOP or YIELD sign may be installed at the entrance to the first roadway of a divided highway, and a YIELD sign may be installed at the entrance to the second roadway.
 - C. For a channelized turn lane that is separated from the adjacent travel lanes by an island, even if the adjacent lanes at the intersection are controlled by a highway traffic control signal or by a STOP sign.
 - D. At an intersection where a special problem exists and where engineering judgment indicates the problem to be susceptible to correction by the use of the YIELD sign.
 - E. Facing the entering roadway for a merge-type movement if engineering judgment indicates that control is needed because acceleration geometry and/or sight distance is not adequate for merging traffic operation.

Standard:

- 02 **A YIELD (R1-2) sign shall be used to assign right-of-way at the entrance to a roundabout. YIELD signs at roundabouts shall be used to control the approach roadways and shall not be used to control the circulatory roadway.**
- 03 **Other than for all of the approaches to a roundabout, YIELD signs shall not be placed on all of the approaches to an intersection.**

Section 2B.10 STOP Sign or YIELD Sign Placement**Standard:**

- 01 **The STOP or YIELD sign shall be installed on the near side of the intersection on the right-hand side of the approach to which it applies. When the STOP or YIELD sign is installed at this required location and the sign visibility is restricted, a Stop Ahead sign (see Section 2C.36) shall be installed in advance of the STOP sign or a Yield Ahead sign (see Section 2C.36) shall be installed in advance of the YIELD sign.**
- 02 **The STOP or YIELD sign shall be located as close as practical to the intersection it regulates, while optimizing its visibility to the road user it is intended to regulate.**
- 03 **STOP signs and YIELD signs shall not be mounted on the same post.**
- 04 **No items other than inventory stickers, sign installation dates, and bar codes shall be affixed to the fronts of STOP or YIELD signs, and the placement of these items shall be in the border of the sign.**
- 05 **No items other than official traffic control signs, inventory stickers, sign installation dates, anti-vandalism stickers, and bar codes shall be mounted on the backs of STOP or YIELD signs.**
- 06 **No items other than retroreflective strips (see Section 2A.21) or official traffic control signs shall be mounted on the fronts or backs of STOP or YIELD signs supports.**

Guidance:

- 07 *STOP or YIELD signs should not be placed farther than 50 feet from the edge of the pavement of the intersected roadway (see Drawing F in Figure 2A-3).*
- 08 *A sign that is mounted back-to-back with a STOP or YIELD sign should stay within the edges of the STOP or YIELD sign. If necessary, the size of the STOP or YIELD sign should be increased so that any other sign installed back-to-back with a STOP or YIELD sign remains within the edges of the STOP or YIELD sign.*

Option:

- 09 Where drivers proceeding straight ahead must yield to traffic approaching from the opposite direction, such as at a one-lane bridge, a TO ONCOMING TRAFFIC (R1-2aP) plaque may be mounted below the YIELD sign.

Support:

10 Figure 2A-3 shows examples of some typical placements of STOP signs and YIELD signs.

11 Section 2A.16 contains additional information about separate and combined mounting of other signs with STOP or YIELD signs.

Guidance:

12 *Stop lines that are used to supplement a STOP sign should be located as described in Section 3B.16. Yield lines that are used to supplement a YIELD sign should be located as described in Section 3B.16.*

13 *Where there is a marked crosswalk at the intersection, the STOP sign should be installed in advance of the crosswalk line nearest to the approaching traffic.*

14 *Except at roundabouts, where there is a marked crosswalk at the intersection, the YIELD sign should be installed in advance of the crosswalk line nearest to the approaching traffic.*

15 *Where two roads intersect at an acute angle, the STOP or YIELD sign should be positioned at an angle, or shielded, so that the legend is out of view of traffic to which it does not apply.*

16 *If a raised splitter island is available on the left-hand side of a multi-lane roundabout approach, an additional YIELD sign should be placed on the left-hand side of the approach.*

Option:

17 If a raised splitter island is available on the left-hand side of a single lane roundabout approach, an additional YIELD sign may be placed on the left-hand side of the approach.

18 At wide-throat intersections or where two or more approach lanes of traffic exist on the signed approach, observance of the right-of-way control may be improved by the installation of an additional STOP or YIELD sign on the left-hand side of the road and/or the use of a stop or yield line. At channelized intersections or at divided roadways separated by a median, the additional STOP or YIELD sign may be placed on a channelizing island or in the median. An additional STOP or YIELD sign may also be placed overhead facing the approach at the intersection to improve observance of the right-of-way control.

Standard:

19 **More than one STOP sign or more than one YIELD sign shall not be placed on the same support facing in the same direction.**

Option:

20 For a yield-controlled channelized right-turn movement onto a roadway without an acceleration lane and for an entrance ramp onto a freeway or expressway without an acceleration lane, a NO MERGE AREA (W4-5P) supplemental plaque (see Section 2C.40) may be mounted below a Yield Ahead (W3-2) sign and/or below a YIELD (R1-2) sign when engineering judgment indicates that road users would expect an acceleration lane to be present.

Section 2B.11 Yield Here To Pedestrians Signs and Stop Here For Pedestrians Signs (R1-5 Series)**Standard:**

 01 **Yield Here To (Stop Here For) Pedestrians (R1-5, R1-5a, R1-5b, or R1-5c) signs (see Figure 2B-2) shall be used if yield (stop) lines are used in advance of a marked crosswalk that crosses an uncontrolled multi-lane approach. The Yield Here To (Stop Here For) Pedestrians signs shall only be used where the law (local regulation or ordinance) specifically requires that a driver to yield or stop. The legend LOCAL LAW may be displayed at the top of the R1-5, R1-5a, R1-5b, and R1-5c signs, if applicable.**

Guidance:

02 *If yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs are used in advance of a crosswalk that crosses an uncontrolled multi-lane approach, they should be placed 20 to 50 feet in advance of the nearest crosswalk line (see Section 3B.16 and Figure 3B-17), and parking should be prohibited in the area between the yield (stop) line and the crosswalk.*

03 *Yield (stop) lines and Yield Here To (Stop Here For) Pedestrians signs should not be used in advance of crosswalks that cross an approach to or departure from a roundabout.*

Option:

04 Yield Here To (Stop Here For) Pedestrians signs may be used in advance of a crosswalk that crosses an uncontrolled multi-lane approach to indicate to road users where to yield (stop) even if yield (stop) lines are not used.

TRAFFIC CONTROL ORDER
XXXXX WARRANT

Location: _____
Procedures to follow for the use of Stop Signs at Residential Intersections

Requirement of Order:

RESOLVED, that Traffic Control Warrant which sets forth procedures to follow for the use of stop signs at residential intersections is hereby approved as follows:

1. Determine the safe approach speeds in accordance with sight distance restrictions. If the safe approach speed is 10 MPH or less, stop signs shall be installed for one of the streets.
2. Stop signs shall not be installed to govern the heavier volume street if that street has more than twice the volume on the lighter street.
3. Safe approach speed is defined as the maximum speed at which a vehicle can approach an intersection and still be able to stop in time to avoid a collision with a vehicle approaching on the intersecting street.

Date of Commission Approval: _____
October 9, 1972

~~Work Order~~ Sent to D.P.W. _____

(2) copies to D.P.W. Information Only (this form shall also be work order)

Install signs _____

Note installation date on both copies as soon as complete and return (1) copy to Manager's office.

City Manager

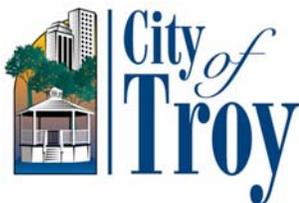
Manager's office will forward copies to Police Department and City Clerk after installation

Date Installed: _____
Public Works Supt.

Copies to:

Police Department 10-16-72
Date

City Clerk _____
Date



TRAFFIC COMMITTEE REPORT

February 3, 2012

TO: Traffic Committee

FROM: Bill Huotari, Deputy City Engineer/ Traffic Engineer

SUBJECT: Burdic at Edith
Request for Intersection Control

Background:

Holly Pryor of 2106 Burdic requested that the intersection of Burdic and Edith be reviewed for the purpose of installing Stop signs. Ms. Pryor states that the lack of Stop signs at this intersection creates a hazardous situation.

The posted speed limit on both streets is 25 mph. Burdic should be assigned right of way as it has direct access to John R and has the heavier traffic flow.

There have been no crashes recorded in the past three (3) years at the intersection. There was however one (1) crash reported on January 6, 2012 when this request was received by the City.

The major sight distance obstructions at the intersection are the large evergreen trees in the western quadrants. The trees come into play when determining the safe approach speeds for the intersection. The safe approach speed was found to be less than 10 mph on Edith, so a Stop sign is the recommended treatment for the intersection.

The city requested that our traffic engineering consultant (OHM) review the request and provide a report of their findings and recommendations (copy attached).

Recommendations:

Staff concurs with our consultant's recommendation that the intersection control be modified from "no traffic control" to Stop signs on the Edith Street approaches to the intersection.

January 12, 2012



Mr. William Huotari, PE
Deputy City Engineer
City of Troy
500 W Big Beaver Road
Troy, MI 48084

Subject: Traffic Control Recommendation for the intersection of Burdic Drive and Edith Street
OHM JN: 0128-12-0010

Dear Mr. Huotari:

As requested, we have reviewed the Burdic Drive/Edith Street intersection to determine the proper traffic control. The subject intersection is a 4-leg intersection located in the City of Troy, approximately 0.15 miles east of John R Road and 0.20 miles south of South Boulevard. Both Burdic Drive and Edith Street are local streets, with Burdic Drive running in the east-west direction and Edith Street running north-south. The speed limit on both streets is 25 mph. There is currently no traffic control at the intersection. Reference the attachments for an aerial and intersection photos.

Background on Traffic Control Determination

Based on the *Michigan Manual of Uniform Traffic Control Devices (MMUTCD)* there are four conditions where STOP signs may be warranted:

- At the intersection of a less important road with a main road where application of the normal right-of-way rule is unduly hazardous.
- On a street entering a through highway or street.
- At an unsignalized intersection in a signalized area.
- At other intersections where a combination of high speed, restricted view, or crash records indicate a need for control by the STOP sign.

Many times STOP signs are installed where they may not be warranted. Traffic experts agree that unnecessary STOP signs:

- Cause accidents they are designed to prevent.
- Breed contempt for other necessary STOP signs.
- Waste millions of gallons of gasoline annually.
- Create added noise and air pollution.
- Increase, rather than decrease, speeds between intersections.

The use of a YIELD sign is intended to assign the right-of-way at intersections where it is not usually necessary to stop before proceeding into the intersection. Conversely, the STOP sign is intended for use where it is usually necessary to stop before proceeding into the intersection. The following conditions should be fully evaluated to determine how the right-of-way should be assigned:

- Traffic Volumes: Normally, the heavier volume of traffic should be given the right-of-way.
- Approach Speeds: The higher speed traffic should normally be given the right-of-way.

- **Types of Highways:** When a minor highway intersects a major highway, it is usually desirable to control the minor highway.
- **Sight Distance:** Sight distance across the corners of the intersection is the most important factor and is critical in determining safe approach speeds.

Crash Analysis

Based on information obtained through Traffic Improvement Association of Michigan, there have been no crashes recorded in the past 3-years at the Burdic Drive/Edith Street intersection. However, there was a reported crash by a resident on January 6, 2012.

Approach Speeds

The approach speed limit on both streets is 25 mph. Speed limits alone cannot be used in this case to determine which direction of traffic should be assigned the right-of-way.

Types of Highways

Although both Burdic Drive and Edith Street are considered local streets, Burdic Drive is the considered the major road at this intersection based traffic volumes. The road with the heavier traffic flows, Burdic Drive, which has direct access to John R Road, should be given the right-of-way.

Sight Distance

The major sight distance obstructions at the intersection are the large evergreen trees in the western quadrants. The trees come into play when determining the safe approach speeds for the intersection. The safe approach speed is the speed at which a vehicle can approach an intersection and still stop in time to avoid a collision with a vehicle on the cross street. Safe approach speeds are determined through calculations.

When the safe approach speed is found to be less than 10 mph for the minor road, a STOP sign is commonly used. In this case, the safe approach speed on Edith Street was found to be less than 10 mph; therefore a STOP sign is the recommended treatment. The safe approach speed calculation spreadsheet is attached for your reference.

Recommendation

OHM recommends that the intersection control be modified from "no traffic control" to a STOP sign on the Edith Street approaches to the intersection.

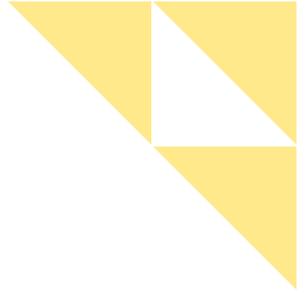
Sincerely,
Orchard Hiltz & McCliment, Inc.



Steven M. Loveland, PE, PTOE
Traffic Project Engineer

Attachments:

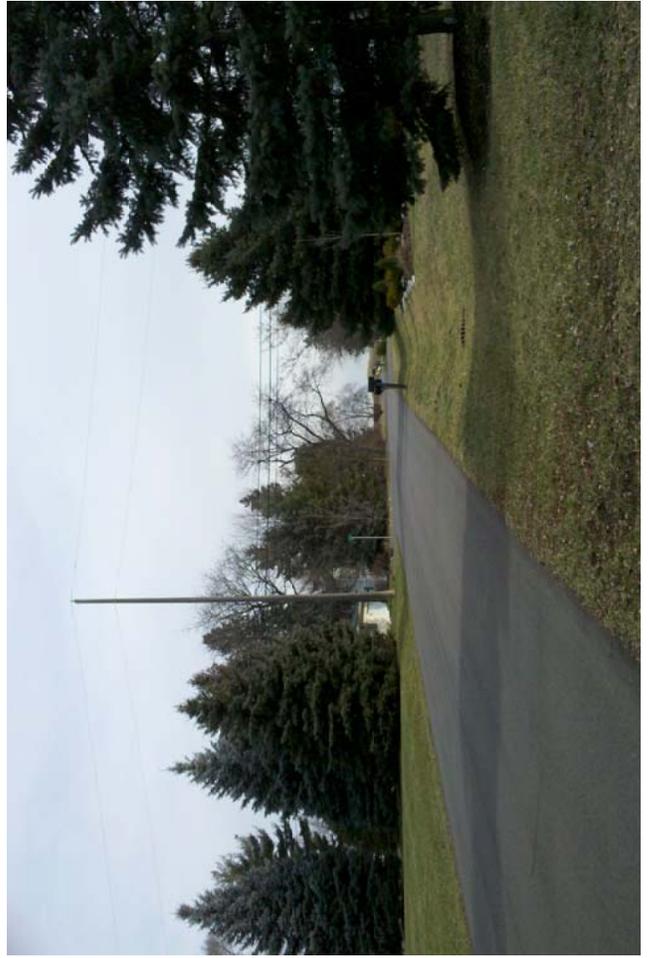
- Aerial and Intersection Photos
- Safe Approach Speed Calculation Spreadsheet



Attachments



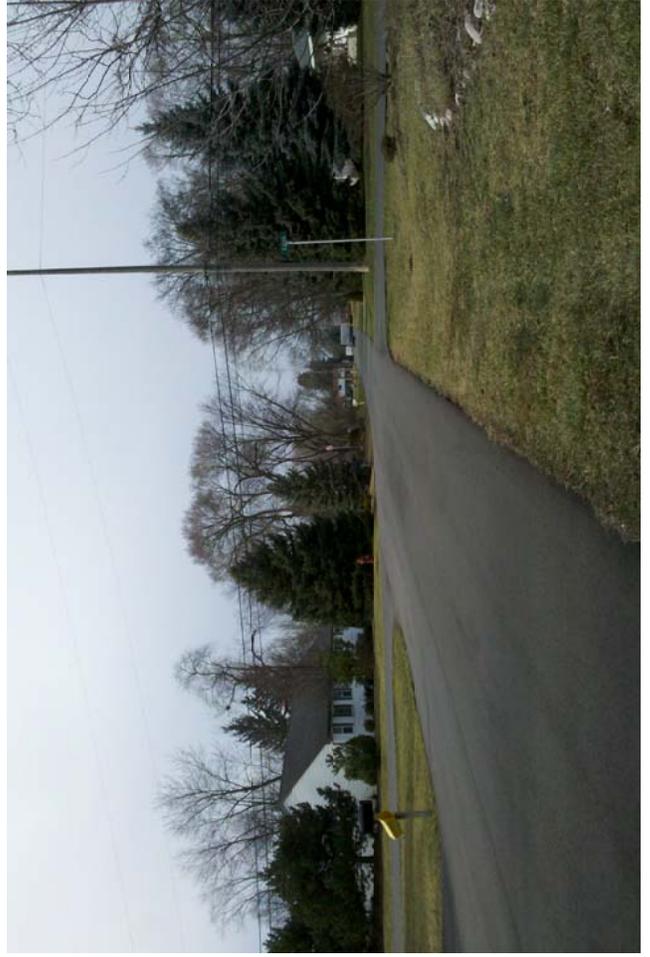
Edith looking south



Burdic looking east



Edith looking north



Burdic looking west

Safe Approach Speed Calculation

Burdic at Edith
City of Troy

Major = Burdic
Local = Edith

Date: 1/9/2012

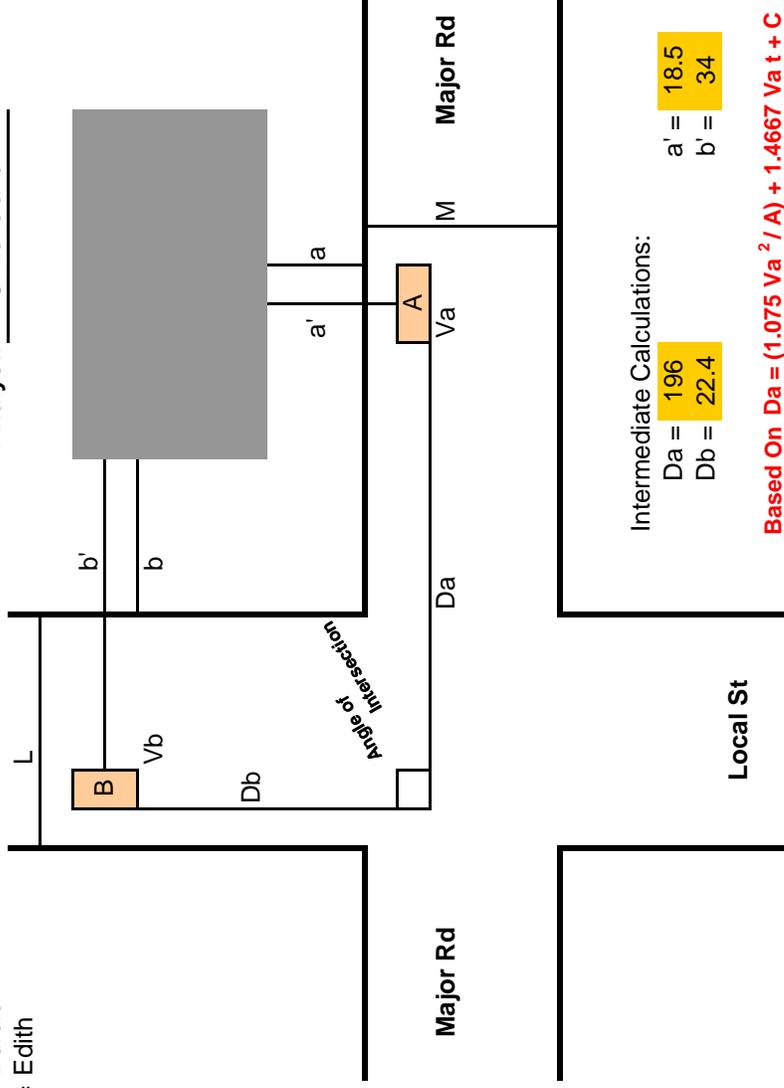
Analyst: S. Loveland

Measured:

- Width of Roads
 - Major: M = 22 (ft)
 - Local: L = 22 (ft)
- Distance to Obstruction
 - a = 10.5 (ft)
 - b = 20 (ft)
- Angle of Intersection
 - Delta = 90 (degrees)
- Major Rd Posted Speed Limit = 25 (mph)

Assumed:

- Speed of Vehicle A = Posted Speed Limit on Major Road + 5 (mph)
- Va = 30 (mph)
- Perception / Reaction Time (AASHTO) t = 2.5 (sec)
- Deceleration rate (AASHTO) A = 11.20
- Clearance distance in excess of safe stopping distance (AAA) C = 0 (ft)



Intermediate Calculations:

Da = 196
Db = 22.4

a' = 18.5
b' = 34

Based On $Da = (1.075 Va^2 / A) + 1.4667 Va t + C$
 $Db = \frac{a * Da}{(Da - b)}$

Calculated Safe Approach Speed for Vehicle Approaching on Local Rd
 Vb = 5.4 (mph)

Notes:

- Enter field measurements in yellow highlighted area.
- Blue fields are std. default values; change only for cause.
- Calculated by spreadsheet

Recommended ROW control for local street

based on safe approach speed :

STOP Sign